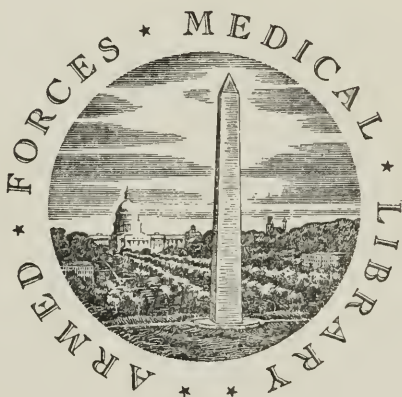


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AN
INQUIRY
INTO THE
DEGREE OF CERTAINTY IN MEDICINE;
AND INTO THE
NATURE AND EXTENT OF ITS POWER OVER DISEASE.

BY

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ETC. ETC.

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TO
MY BROTHER, GEORGE BARTLETT,
OF WOONSOCKET, RHODE ISLAND;

To whose acute and comprehensive mind my own is greatly indebted for many of its clearest views and its strongest convictions of philosophic truth; and to whose genial and sunny companionship my life owes many of its pleasantest and happiest hours, this little volume is affectionately inscribed.

WOONSOCKET, RHODE ISLAND,
September 1st, 1848.

P R E F A C E.

THE main title of my inquiry is the same as that of the very elegant and classical essay of Cabanis, published half a century ago. I adopt it for the simple reason that there is no other at all appropriate. Since writing my own essay I have read, for the first time for nearly twenty years, the work of Cabanis. Besides the differences that must almost unavoidably exist, in the conception and treatment of a complex and difficult question by different minds, I may be permitted to say, that the leading and principal design and purpose of the two works are not exactly identical. The essay of Cabanis is more elementary than my Inquiry is; it deals more systematically with the fundamental nature and philosophy of medicine, than my Inquiry does. The latter may be said to take up the subject where it is left by Cabanis. I have no pretensions to supplant, or to rival, the finished and beautiful essay of the French philosopher and physician; and the unlikeness of the two works is at least sufficient to save me from the imputation

of having merely repeated my forerunner, or of having merely gone over the same ground.

Some of my readers, especially the more staid, and older ones—my esteemed and venerable seniors and cotemporaries—may think, perhaps, that I have now and then suffered myself to be seduced into dangerous proximity to the boundary line, which separates good taste and simplicity from their opposite qualities. If I have done so, it has been from yielding to an impulse, excited and kindled by the task in which I have been engaged, and which I found it difficult to resist. If the drapery of our philosophic muse wears a somewhat warmer and livelier hue, than the sober coloring which more appropriately belongs to it, it has been caught from the sunny fields through which her pathway has lain. If the axle of our car has now and then waxed fervid, and if an occasional gleam of light has flashed from its flying wheels, let us at least plead, in extenuation of the weakness, that it is not from the careless rein, or any perilous speed with which our coursers have been driven, but from the glowing and radiant atmosphere through which we have been carried along.

There may, possibly, be others who will say that my advocacy of the claims of medicine is more zealous and earnest than is becoming in one of its practitioners and teachers. I can only answer, that

I do not think so. I speak for the art and the science, not for myself. This art and science have been violently, and I think, blindly and unjustly assailed, by parties who understand neither their own strength and position, nor ours. I have endeavored to make fair and manly stand against them, and I have done nothing more. When crowds of epauletted and bedizened coxcombs, who have never smelt gunpowder, make the air clamorous with their noisy boastings, the war-worn and scar-covered veteran may, at least, point to the trophies that he has brought from a hundred battle-fields.

AN INQUIRY

INTO THE

DEGREE OF CERTAINTY IN MEDICINE.

I AM stating only what everybody knows to be true, when I say that the general confidence which has heretofore existed in the science and art of medicine, as this science has been studied, and as this art has been practiced, has within the last few years been violently shaken and disturbed, and is now greatly lessened and impaired. The hold which medicine has so long had upon the popular mind is loosened; there is a wide-spread skepticism as to its power of curing diseases, and men are everywhere to be found who deny its pretensions as a science, and reject the benefits and blessings which it proffers them as an art.

It is not necessary, for my present purpose, to point out the causes and influences which have led to this state of things. I will merely say, in this connection, that however trifling and inconsiderable may have been the effects upon the feeling to which I have alluded, of the famous article of Dr. Forbes, first published in the *British and Foreign Medical Review*, I give utterance, I suppose, to the

almost universal sentiment of the profession, when I express regret that the author of that article did not accompany his official and voluntary confession of medical delinquency, incompetency, and uncertainty, with the qualifications and conditions absolutely essential to the truth of the confession itself. This, Dr. Forbes has almost wholly neglected to do. Without entering into any elaborate criticism of his paper, it is quite safe to say, that he has taken, if not a distorted, at least a partial view of his subject; he has looked at one side only of the shield; one hemisphere only of his world of truth has been turned to the sun. Now, this partial view is necessarily a false view: it is false because it is partial,—if for no other reason. Dr. Forbes has drawn, in strong and exaggerated colors, the manifold imperfections of medical science, and the discouraging uncertainties of medical art; but he has neglected to show the limits of these uncertainties, and to circumscribe the boundaries within which these imperfections are confined. This he should have done, and not only would his second picture have constituted, on the principle of contrast, often followed by artists in such matters, an appropriate companion to his first,—the clearer and more radiant sky, the steadier and serener light, the erect figures with hopeful and forward-looking faces of the former, brought into striking and beautiful relief by the cloudy and uncertain horizon, the murky and dim atmosphere, and the constrained and groping shapes of the latter,—but more than this: his first delineation is a true one only when the

second hangs by its side; the harmony of the lights and shadows, and the truthfulness of the objects in each picture, are dependent upon the presence of the other.

The canvass, which now stands upon my easel, is placed there to receive, at least the outlines, and some of the leading and more prominent features of this second picture. I have waited, I think, long enough, for Dr. Forbes, or for some one else better qualified than myself, to do the work which I have here undertaken. If Ulysses is not present in the field to bend his own bow, some weaker arm from the camp must essay the enterprise. It seems to me high time, that a clear and earnest word should be spoken for the science which we study and teach, and for the art which we inculcate and practice. The interests of truth, of our profession, and of humanity, alike demand that the legitimate claims of medicine to the regard and confidence of mankind should be vindicated and maintained. And this is the task I have set myself. I wish to show as clearly and as positively as I can, the nature, and the degree of the certainty that belongs to medicine as a science, and as an art. In doing this, I shall deal but little in general assertions, unsustained by positive proofs, and not at all in empty and vague declamation; I shall state the reasons of the faith that I profess, and I shall exhibit the evidence upon which it rests.

Anatomy, constituting one of the great primary departments of medical science, stands in no need of any vindication; it has never been accused of

any want of positiveness and certainty ; it has never been upbraided on account of its weakness and imperfections. Like its analogous and kindred branches of natural history concerned with the structure and composition of the other various forms of matter, its investigation is beset by few of the difficulties which are connected with the study of the laws and phenomena of the living organism ; and like these branches, it has, for a long period of time, been steadily advancing towards perfection. We have a right, I think, to contemplate this subject, not merely with some degree of complacent satisfaction, but with justifiable exultation and pride. The more obvious and coarser structure, so to speak, of the several parts and organs of the human body, has, for a long time, been pretty accurately known ; but within the last fifty years, and especially within the last twenty-five years, through the aids furnished by the microscope and by chemistry, the more recondite and elementary portions of this structure have been brought to light. Not only has every bone and every muscle of the body been named and numbered and minutely described ; not only have all the blood-vessels been traced through their most delicate ramifications ; not only have those attenuated and gossamer threads of pearly tubuli, through whose subtle and mysterious agency the central and indivisible spiritual essence which we call the soul, holds communion with the body to which it is temporarily united, and with the material universe, been followed through all their intricate windings and

their complex intertwinings with each other, from their starting points in the nervous centres to their ultimate terminal loopings in every part of the body; not only has the doubtful duplicature of every arachnean membrane, almost and under many circumstances altogether invisible, from its excessive thinness and its perfect transparency, been unfolded; not only have the gauge and measurement of the blood globules been accurately taken; but the progressive development of the organic tissues has been closely and assiduously followed, step by step, through all their successive changes and transformations, from the rude and simple elementary cell with its nucleus and nucleolus, up to the highest and most finely elaborated structures of the organism. Even the primordial embryotic atom has been seized, almost at the moment of its inception, and a corner of the veil which hides the mystery of the creative energy been raised. Not only is all this, and much more that I might say of the same character, strictly and literally true, but as the astronomer is able, from the elements of the circuits which the planets of our system are now making round the sun, to assign to them the respective places which they held in the heavens thousands of years ago,—so the comparative anatomist, guided by the unerring light of certain correspondences and harmonies of the animal organization, is also able, from some paltry fragment of a crumbling bone, dug from the earthy or calcareous bed where it had lain for ages whose duration can be neither measured nor ima-

gined, to recreate the individual to which it belonged, and to know as a cotemporary Buffon or Cuvier might have known, all its habits and economy. "A geologist," in the words of one of my friends—anatomist, physician, philosopher, poet, and wit—"hands to his physiological friend, a particle broken from a fossil tooth, and requires the nature, size, habits, food, date, of the behemoth, the megalosaurus, the palæotherium that chewed upon it. The physiologist grinds a speck of it down to a translucent lamina, saturates this shaving with the light from a little concave mirror, screws his inexorable lenses to their focus, and extorts a truth which nature had buried beneath the deluge and blotted with the night of uncounted ages."

Remarks, very similar to the foregoing, with certain abatements and qualifications, may be made in regard to physiology, the second great department of medical science. The functions of nearly all the organs and tissues of the human body have been more or less positively and completely ascertained. The properties of the bony framework of this animal mechanism, the strength and resistance of its plates, its cylinders and its arches, are as well known as those of the parts of any inanimate machine. The power and direction of the muscular forces, in all their thousand-fold combinations, have been nicely and accurately measured; we have traced the two antagonistic and ever-moving currents of reparation and decay, following the materials of nutrition through their va-

rious metamorphoses to their final incorporation with the tissues, and thence again out of the body, when they had fulfilled their appointed but temporary mission; we have tracked the course of the blood through its double and interlocking circuit; we understand as well the play and action of its central propelling apparatus, as we should if it were working, naked, and transparent before us; we know the exact moment when its several cavities contract and dilate, and when its delicate and nicely adjusted valves open and shut; we can see the same fluid put on its scarlet coloring in the lungs, woven by the fanning atmosphere with which it here comes in contact, to be put off again in the remote network of the capillary vessels; we can watch the rapid alternate motions of the ranks of microscopic cilia waving, long after all other signs of life have ceased to exhibit themselves, like the green grass or the golden grain as the fresh breeze of the summer passes over them; we have raised, at least a little way, the veil which hides the subtle and wonderful processes of our spiritual nature,—we have traced the power of thought, the capability of emotion, the consciousness of impressions received from surrounding objects to their connection with the vesicular matter of the brain; and we know the channels along which these impressions are transmitted, and those which carry, in an opposite direction, the stimulus of the nervous power, and the mandates of the will.

I do not mean to say by these remarks, that the

sciences of anatomy and physiology are by any means finished and complete; this can hardly be said of any subject of human inquiry. I mean merely to say that this degree of completeness is as satisfactory as it is in any of the natural sciences, and that it is daily advancing. There are impassable barriers to our investigations into the secrets of nature, whatever may be their character or direction; and here, as elsewhere, we are surrounded on all sides by a ring of darkness which no power of ours can ever penetrate or dispel. But we may rest assured that here, too, as elsewhere, all that is knowable will be known. Every passing month furnishes its contribution to the work; some new discovery is made, or some old truth is strengthened and illustrated, or some error or delusion is corrected or dispelled; a thousand microscopes are prying into the deepest and darkest recesses of organization; a thousand laboratories are busy with the chemistry of life; myriads of patient scalpels are plying their careful and laborious dissections, and so these, like all other branches of human knowledge, are carried slowly but steadily forward in their interminable career.

It is not, however, against these departments of our science that the accusations, to which I have alluded, have been brought, so that there is no occasion for my giving to them anything more than this general and passing notice. It is unnecessary to make a formal defence of a point which is never attacked. The charges of which I have spoken, refer particularly, and almost exclusively, to that

department of medical science, designated by the terms *pathology*, and *therapeutics*. This department is constituted by the phenomena and relations of disease; it embraces all these phenomena, and all these relations. It professes, and claims to consist of, a knowledge of the causes of disease, of the seat and phenomena of disease, and of the means of preventing, mitigating, and removing disease. The charges against our science are, that it deceives itself in this matter,—that its pretensions are either altogether false, or greatly exaggerated,—that its knowledge of disease is vastly less than it professes to be,—and especially, that its power of curing and of mitigating disease has been immensely over-estimated and over-stated. These charges sometimes deny altogether the existence of this power, although, in most instances, they content themselves with the allegation that it is very limited in extent, and very uncertain in its application.

These are grave charges, and I think they should be gravely met; they strike at the very foundations of our science, as a power and means for removing and diminishing the physical ills of life; they rob it of its chiefest grace and glory; they take away its highest claim to the regard and gratitude of men; they deserve, I think, an honest and thorough investigation; and this investigation, subject to the conditions of the space within which I wish to work, and the ability with which I may be enabled to work, I now proceed to undertake. I shall endeavor to show the nature of our knowledge of

disease—its extent, and its degree of positiveness ; I shall endeavor to show how far, and with what measure of certainty and of constancy, we are able to control, to mitigate, and to remove disease.

The best way, and, indeed, the only way, within the limited space which I have assigned myself, in which I can do this, is to rely principally upon the evidence and illustrations which may be derived from the study and examination of some individual disease. This disease, in order to answer my purpose, should be of frequent occurrence, not confined to any particular localities, susceptible of being clearly marked in its characteristic features, and sufficiently severe, more or less seriously to endanger life. I do not know any acute affection that so nearly fulfils all these conditions, as *pneumonia*, or inflammation of the substance of the lungs ; and I shall accordingly make use of this disease, in the further prosecution of my subject. It is only important for me to add here, in order to remove any suspicion that may arise in the minds of my skeptical readers, that I have chosen a one-sided, and an unfair subject for the illustration of my inquiry, that after having gone through with this detailed and special illustration, I intend to point out the differences which exist between this disease and others, whether these differences are in my favor or against me. I shall strive not only to tell the truth, but to tell the whole truth.

There are several forms or varieties of pneumonia ; it is necessary for me to state here, that in the use which I propose to make of this disease, I shall

confine myself to its ordinary sporadic form, occurring in persons after the age of puberty, and at the period of attack, in the enjoyment of, at least, an average degree of health, and free from any other obvious disease.

The first inquiry that presents itself relates to the local lesion which constitutes, anatomically, the disease. What, and how much do we know of this lesion?—of its seat, its phenomena, its nature? What are the foundations, the nature, the extent, and the degree of certainty, of our knowledge of these things? The answer to these questions is at hand; it is definite, and it is sufficiently satisfactory. We know that with the commencement of the inflammation, the portion of lung which is the seat of this morbid action, becomes of a deeper red color than it has in health, with a livid or violet tinge; that its specific gravity is increased, from an undue accumulation of blood in its vessels, and a corresponding diminution of air in its air-cells; that it has lost, in a great degree, its spongy and elastic feel, and is more doughy and solid to the touch; that it is less tough, and more friable; and that when cut or torn, a large quantity of reddish, turbid, and frothy fluid flows from the surfaces. We know that except in a very small number of cases, in which this stage of engorgement continues until the subsidence of the disease, in the course, generally, of from two to five or six days, the diseased lung undergoes other, and still more striking changes. Its specific gravity is still further increased, so that it is as heavy and solid

as liver; it contains no air and does not crepitate; its air-cells are obliterated; its surfaces, when cut or torn, are of a deep red color, often mottled, or marbled; a reddish, thick, opaque, and semi-purulent fluid flows from them in moderate quantity, and they are crowded with a multitude of small, red, slightly flattened, granulations. When the disease does not destroy life, this condition of the lung, after having persisted for a few days, gradually disappears, and the lung as gradually returns to its former state. In a few fatal cases, death takes place while the lung is still in the condition just described; but in a large proportion of these cases, it becomes soft, and still more friable, and from violet-red, it becomes of a grayish, or yellowish color. Such are the characteristic anatomical phenomena of this local lesion. They are very constant, with the conditions that have been stated, and they have been ascertained with entire and absolute positiveness. A certain class of physicians—I mean the homœopathists,—deny the value and usefulness of this knowledge, but no one doubts the certainty of the knowledge itself.

The lesion that I have described may involve at the same time, or successively, both lungs, but in a large majority of instances, it is confined to a single lung, and it occurs much more frequently in the right than in the left. Of fourteen hundred and thirty cases, collected from reliable observers by Grisolle, the inflammation was limited to the right side in seven hundred and forty-two; to the left in four hundred and twenty-six; and it ex-

tended to both in two hundred and sixty-two. Every portion of the lung may be the seat of the lesion, but the latter occurs more frequently in the lower, than in the upper lobes; the right upper lobe is more frequently affected than the left, and the anterior edges of both lungs are more constantly exempt from the disease than any other portions. The inflammation is, in most instances, progressive,—that is, it extends from its original seat to other, and new portions of the pulmonary tissue; this progression is usually gradual,—sometimes it takes place suddenly. When pneumonia is double, that is, when both lungs are involved, the second is almost invariably attacked, not simultaneously with the first, but in from four days to a fortnight afterwards.

I cannot see why our knowledge of the pathological anatomy of pneumonia, thus briefly indicated, should not be considered, in a good degree, satisfactory. I do not pretend that this knowledge is perfect, and complete. It is at least exceedingly difficult, it may be, in the nature of things, altogether impossible, for instance, to ascertain in what precise tissue the inflammatory process commences, and in what minute molecular changes and perversions it consists. But this kind of imperfection belongs to all natural science; as much, for instance, to the science of chemistry as to that of life. I will only add, that the other elements of the pathology of pneumonia,—the accompanying inflammation of the pleura; the change in the composition of the blood; the striking and singular accu-

mulation of solid masses of fibrine in the cavities of the heart, in a certain proportion of fatal cases; the occasional, but very rare, formation of a distinct abscess in the lungs; the varieties of the lesions at different periods of life, and under other circumstances, have all been ascertained as carefully, and as positively, as the more essential and characteristic phenomena that I have described.

In the second place, the symptoms of pneumonia, the general and local signs by which it manifests itself, and reveals its presence, are not less accurately and positively known. In about one quarter of the cases, the formal access of the disease is preceded for a few days by various disturbances of the system, usually of moderate severity; in the other three quarters, the disease commences suddenly, without any premonition. The initiatory symptom in most cases is a chill, accompanied, or immediately followed by, pain in the side, more or less acute; cough; dyspnoea; a feeling of general uneasiness; headache; febrile excitement; and the expectoration of viscid, tenacious, frothy sputa, of a uniform brick-dust color. The duration of these, and of all the other symptoms, their constancy, their varieties in degree and in kind, their importance and value, as diagnostic and as prognostic indications, their differences and peculiarities in different forms of the disease, have all been very carefully studied, and very accurately determined. To give the results and details of all these researches would be, so far, to write an elaborate monograph upon pneumonia; but this is not my

purpose, and I must content myself with the foregoing general, but distinct and unqualified assertion. Beside these rational symptoms, as they are called, there is another class of phenomena, of a peculiar character, constituting evidences of the existence, the seat, and the stage of the disease, still more conclusive. These are the *physical signs*, as they are called, of pneumonia. They consist in certain modifications of the resonance of the walls of the chest, corresponding to the diseased lung, on percussion; of the natural sounds of the respiration and the voice, heard when the ear is applied to the chest, and in the presence of other sounds of a new and unusual character. By the aid of these acoustic phenomena, we can fix upon the exact portion of the lung which is the seat of disease; we can mark out its boundaries; we can follow these boundaries inch by inch, as they advance, and invade new parts of the lung; we can follow the natural progress of the inflammation from its first, to its second period, and back again in its retrograde march towards health. We know the precise moment of time, when the air-vesicles are so blocked up, that no air passes into them, and the precise moment, also, when they are again opened to admit it. The roar of conflagration does not mark more clearly, the passage of the raging element from chamber to chamber of a burning house, than does the fine dry crackle of the crepitant rhonchus, the presence and march of inflammatory engorgement of the lungs. It cannot be necessary for me to pursue this branch of my subject

any further; certainly, I have said enough to convince the most skeptical of my readers, if they believe what I say, that there is no lack of certainty and positiveness, in the signs by which pneumonia is revealed to us during life.

Pneumonia is a grave affection, and one that frequently destroys life. The degree of danger which attends it, the circumstances which increase and diminish this danger, and the signs by which this increase and diminution are indicated, are all very accurately ascertained. One of the most striking and obvious of these circumstances is the period of life at which the disease occurs. From puberty to the age of thirty, the danger is slight, and the mortality small; under anything like prompt and judicious management, certainly not more than one case in fourteen, and probably considerably less, terminating in death. From the age of thirty, onwards, the danger and mortality increase with great regularity, and after the seventieth year of life, more than half the cases are fatal. Again, the probabilities of a fatal termination are increased by a feeble and delicate constitution in the use of alcoholic drinks. Inflammation, and especially by previous habitual indulgence of the upper lobe is more dangerous than inflammation of the lower, and there is some reason to think that the disease is somewhat graver in the female than it is in the male sex. The previous occurrence of the disease in the same person seems also to increase in some degree its danger.

Furthermore, the character of the several symp-

toms and their various combinations, have been very accurately appreciated, as signs of the degree of danger of pneumonia, and as indications of its probable termination. Finally, there are certain forms of the disease in which the danger is very greatly augmented; and this danger varies also very considerably with certain prevailing tendencies, or epidemic constitutions, as they are called, existing during certain periods of time, and then changing or disappearing.

I must content myself with these general statements in regard to our power of estimating the danger of pneumonia. There is no doubt whatever in regard to their truth. I do not mean to say by this, that in any given case of pneumonia, the physician is ever able to fortell, absolutely and without qualification, whether the disease will terminate in death or in recovery. He can never do this. Everything connected with life is subject to contingencies which no human sagacity can foresee. In disease, as in health, we know not what a day may bring forth; and all we can ever do is to calculate probabilities. What I mean to say is, in the case before us, that these probabilities can be very closely calculated. The value of the several circumstances which influence and indicate the degree of danger that attends the disease, has been so accurately determined, as to enable us, in most cases, to measure this danger with great precision. When the disease, for instance, occurs between the tenth and the thirtieth years of life, coming on suddenly in a stout, robust

person, previously in the enjoyment of good health; if the inflammation is confined to the middle and lower portion of a single lung; if the respiration is not more than thirty or forty, and the pulse not more than a hundred or a hundred and ten, in the minute; if the expectoration is reddish and tenacious, becoming in a few days yellowish and opaque; if there is no extreme muscular debility or restlessness; if, in the course of the disease, the urine, when treated by nitric acid, presents a pretty abundant cloudy precipitate; and if the patient is judiciously and promptly treated, the danger of a fatal termination is exceedingly small. This termination is possible, but not probable. On the other hand, if the patient is past the fiftieth or sixtieth year of life; if his constitution was delicate at the time of attack, or if it had been deteriorated by the use of alcoholic drinks; if the pulse is more than one hundred and forty in a minute; if there is great rapidity of respiration; prostration of strength; a dark fluid expectoration of the color of prune juice; the urine remaining clear and showing no precipitate when treated by nitric acid, it is almost certain that the disease will terminate in death. I do not say that it is absolutely impossible, under such circumstances, for a patient to recover, but such an event is not at all probable. Between these extremes there is, of course, every conceivable intermediate degree of danger, and these intermediate degrees, like the extremes, may, in most cases, be estimated with very satisfactory precision and certainty.

There is no other portion of the natural history of diseases involved in so much obscurity, as that which relates to their causes. Except in the case of certain poisons, the efficient producing causes of disease are entirely unknown to us. One person suffers and another escapes, apparently under the same circumstances, and subject to the same influences, and we are utterly unable to account for the difference. The most that we can do, is to seek for, and to endeavor to appreciate, the circumstances and conditions which seem to favor the production of disease, and in this way to act as its predisposing or exciting causes. In the instance of the disease before us, the most important of these are age, sex, season, exposure to cold, the previous occurrence of the disease, and that unknown agency which we call epidemic influence. Pneumonia is sufficiently common during early childhood; from the age of six or seven, to puberty, it is much less frequent; from fifteen to twenty, its frequency increases; it reaches its maximum, from twenty to thirty; and it continues to be of common occurrence through all the subsequent periods of life. In most parts of the civilized world the number of cases of pneumonia occurring amongst males is much greater than the number occurring amongst females. This is sufficiently accounted for, however, by the difference in the occupations of the two sexes. Pneumonia occurs at all seasons of the year, but it is much more common during the cold than it is during the warm months; and so on of the other influences that I have mentioned.

The most important and interesting part of our inquiry still remains to be considered, and the space that I have already occupied admonishes me to desist from any further illustrations of the state of our knowledge of the natural history of pneumonia. It can hardly be necessary for me to do so, although nothing would be easier, if the subject before me required it. I apprehend that some even of my professional readers would be surprised by a full exposition of the extent and the positiveness of this knowledge. The different forms and varieties of the disease, its various complications, and especially its most important and numerous relations to other diseases, might all of them furnish us with instances and evidences of this knowledge, not less striking than those I have already given. But I have said enough, I think, to convince the most skeptical, and to satisfy the most incredulous, that the science of medicine, so far at least as pneumonia is concerned, in no degree deserves the charges of incompleteness and uncertainty which have been laid at its door.

The value of medical science depends wholly upon its connection with medical art. It might, to be sure, be cultivated, as an interesting subject of inquiry, independent of this connection; but it derives most of its interest, and all of its importance, and practical utility, from its agency in the prevention, mitigation, and removal of disease. These are its great ends and objects, and so far, only, as it attains them, or ministers to them, can it lay claim to our veneration and regard, as a

blessing and a benefit to our race. It happens, however, that less confidence is felt in medicine, as an art, than as a science. It is precisely here, in its chief end and purpose, that it is said to fail. Physicians, it is admitted, may indeed understand the seat and nature of disease, but it is denied that they can, with any certainty or uniformity, control or cure it. Practical medicine, it is asserted, is altogether a hap-hazard affair of guess and conjecture, doing good when this happens, more by accident than according to any constant and fixed principles, and as often doing harm as good. It is my purpose now to inquire honestly, and carefully, into this matter. I wish to show, and I intend to do so, according to the extent of my means and ability, the nature, the degree, and the certainty of our power over disease. For the purpose of illustration, I shall continue to make use of the disease which has already, thus far, furnished me with materials for my investigation.

Considering the very wide differences in the forms and character of pneumonia, there has been, for a long time, a pretty general agreement amongst medical men, in regard to what has been considered as the best method of treating it. General blood-letting, during the early periods of the disease, has been principally relied upon, by the immense majority of careful observers, and experienced practitioners. With only occasional and temporary exceptions, this has been the leading and prominent remedy. So strong and so universal was the confidence in this remedy, that the feeling became very

general, that it was essential to the cure of the disease; or, at least, that it could not be omitted, without the most imminent hazard to the patient. It was a very common, if not a general belief, not only that the chances of recovery were almost indefinitely increased by the operation, but that the disease was very much shortened in its duration, and in many cases wholly and at once arrested. This conviction—the growth of centuries—was the gradual result of the aggregate, common, every-day experience of the profession, during this long period of time. And it was never stronger, perhaps, or more firmly fixed in the general medical mind, than at the period of the publication, in 1828, of Louis's researches upon this subject,—the effects of blood-letting in pneumonia. This is a very remarkable work, and its conclusions have a direct, and very important bearing, upon the inquiry in which I am engaged. Louis's researches constituted the commencement of a more rigorous and searching investigation than had hitherto been instituted, into the actual extent of our power over disease. The time for such an investigation had now fully come. It could not have been made before the great discovery of Laennec had prepared the way for it, by giving us more accurate and positive means of diagnosis than we had hitherto possessed. The general belief, of which I have spoken, derived from the traditions of general experience, did not satisfy the positive and exacting mind of Louis. He said, in effect, if not in so many words,—I know very well that this belief is

almost universal; I know that it comes to us sanctioned by the wisdom, and sustained by the experience of ages; but other beliefs, not less universal, and not less firmly settled, have been proved at last to be partly, or wholly false; there have been many, and wide-spread medical delusions, which time, and a sufficiently thorough investigation, have at length dissipated; this may be one of the same class; at any rate, it is due to the cause of science, and the interests of humanity, that the subject should be more closely studied than heretofore. I do not deny that the conviction is well founded,—I deny nothing,—I only say that the evidences of its truth do not exist, or, at least, that they have not been furnished to us,—I cannot find them.

Between the years 1821 and 1827, Louis studied carefully, and from day to day, at La Charité, the effects of blood-letting in fifty cases of pneumonia, terminating favorably, and in twenty-eight cases which terminated in death. The patients were bled from one to four times, according to the indications in each case; from ten to fifteen ounces of blood being taken at each operation. Of the fifty cases terminating in health, twenty-three were bled, for the first time, within the first four days from the commencement of the disease, and the average duration of the disease in these cases was seventeen days; twenty-seven were bled for the first time, between the fifth and the ninth days, inclusive, and the average duration of the disease in these cases, was twenty days. Every possible precaution was taken, that the two groups of cases,

thus compared with each other, should be essentially alike in all the circumstances that could, in any way, affect the danger of the disease. Louis studied, further, the effects of the same remedy upon the leading symptoms of pneumonia. He found that the pain in the side was never wholly, and at once, removed by an early blood-letting; but, that on the contrary, it was generally more severe, for twelve or twenty-four hours after the first bleeding, if this was practiced early in the disease. He found, however, that the average duration of the pain in the first group of cases, was six days, and a little over eight days in the second group. He found that most of the other symptoms were moderately influenced by the bleedings. Between the years 1830 and 1833, Louis studied in the same manner, at La Pitié, the effects of blood-letting in twenty-nine cases of pneumonia, four of which terminated fatally. Of the twenty-five cases terminating favorably, thirteen were bled between the second and fourth days of the disease, inclusive; and the average duration of these cases was fifteen days and a-half; the other twelve cases were bled from the fifth to the fourteenth day, inclusive, and their average duration was eighteen days and a-quarter. No one of these cases was bled on the first day of the disease. The first bleedings were a little more copious than in the cases at La Charité. The effects of the remedy upon the individual symptoms did not differ from those in the latter cases.

So far as this limited investigation could settle the question, Louis considered himself justified in

coming to this conclusion,—that blood-letting has a favorable effect upon the march of pneumonia; that it abridges its duration; but that this effect is much less than had generally been supposed, patients who are bled during the first four days of the disease, all other things being equal, recovering four or five days sooner than those who are bled later. And as far as this particular investigation is concerned, the conclusion is perfectly justifiable and legitimate. It results with a slight qualification, necessarily and inevitably, from the facts; and Louis never pretended to carry the conclusion beyond this. He says, expressly, that these facts are neither sufficiently numerous, nor sufficiently various, finally to settle the question at issue; and that he publishes them principally, for the purpose of calling anew the attention of observers to the subject. It is important to bear in mind that these investigations show directly, not so much the absolute effects of blood-letting, as the difference in its effects when performed early, or late, in the disease. His conclusions, so far as his own facts are concerned, would have been more truly stated, if he had confined it to early, compared with late, blood-letting.*

* There is one other important conclusion of Louis's, which is not kept strictly within the limits of his facts. It results from his investigations, he says, that pneumonia is not *arrested* by early blood-letting. It would have been more exact to have said, that, according to these investigations, pneumonia is not arrested by bleedings, *practiced after the first day of the disease*. I do not mean to say, that this conclusion is a false one; I say, merely, that it does not follow directly, and necessarily, from the facts from which it is derived. The somewhat

In 1836, Dr. James Jackson, of Boston, published a detailed analysis of thirty-four cases of pneumonia, received into the Massachusetts General Hospital between the years 1825 and 1835, for the purpose of showing, according to the accurate and positive method adopted by Louis, the effects of treatment upon the disease. Without following him through all the steps of his analysis, it is enough for me to say, that his conclusions in regard to blood-letting correspond essentially with those of Louis, with some difference in favor of the former. The average duration of the disease in those who were bled for the first time on or before the fourth day, was about twelve days; the average duration in those bled after the fourth day, was thirteen and a quarter; and in five cases which were not bled, except locally in one, the average duration was fourteen days and a half, nearly. The latter cases were also the mildest. I will only add, that Dr. Jackson is disposed to attribute the shorter duration of his cases, when compared with those of Louis, in a considerable degree at least, to the warmer temperature of the rooms in which they were placed, and to the better general care which they received. Dr. Jackson also found the effects of early blood-letting upon the pulse, the pain, and

moderate difference between the effects of early, and late blood-letting, might justify the *probable* conclusion, that blood-letting at the very onset of the disease, would still fail to arrest it; but this question could be positively settled, only by this particular application of the remedy. The effects of blood-letting might be very different within the first few hours, and after the first day of the disease.

the character of the sputa, somewhat more marked and immediate than Louis.

In order to know exactly and positively the effects of remedies, we ought to be able to compare groups of cases treated by them in all their varieties and combinations, with corresponding groups of cases left to themselves, or treated without these remedies. This is obvious. We cannot know certainly what are the effects of our treatment, unless we have some reasonable and positive assurance as to what would have been the course and termination of the disease if the treatment had been omitted. In the case of pneumonia, as well as in that of most other grave diseases, this knowledge is in a good degree wanting; at least it is scanty and incomplete. The conviction is so general and so strong that this disease may be controlled by remedies, that it is hardly ever left to itself; and certainly no physician, in the present state of our knowledge, would be justified, merely for the purpose of elucidating and determining this question, in adopting such a course. We have no right to sacrifice the interests of humanity to those of science. But the positive and conclusive evidence derived from this comparison is not altogether wanting. It could hardly have escaped observation, that pneumonia might terminate in recovery, quite independent of any aid derived from medical art. Cases must always occasionally, and not very unfrequently have been met with, in which from circumstances of one kind or another,—the caprice or necessities of the patient, or the neglect of the

physician,—no active remedies were made use of, and which still ended in health. Besides this, the use of the leading remedies, although very general, has never been absolutely universal. One practitioner has treated his patients without blood-letting, another without antimony, another without mercurials, another without blisters, and still, with all these omissions, patients have continued to recover. This must have rendered it sufficiently obvious at least, that no one of these remedies was absolutely necessary to the cure of the disease. But we have evidence upon this subject still more precise and definite, which it is important that I should give. I have already referred to five of Dr. Jackson's cases in which general blood-letting was omitted, and which terminated in health, but in which the average duration of the disease was considerably longer than in graver cases where blood-letting was practiced. During the year 1840, Grisolle treated eleven patients attacked with pneumonia, *without using any active remedies*. The patients were mostly young, one only having reached the age of fifty-six years; and all the cases were sufficiently mild to justify M. Grisolle, as he thought, in leaving them without any active treatment. They were confined to bed, on a light diet, had some pectoral drinks, and, in a few instances, a simple laxative, like castor-oil. In nine cases, the inflammation had reached its second stage when the patients entered the hospital; in two, it was still in its first stage, and did not pass into the second. *The cases all terminated favorably*, but it

is very important to remark, that, considering the limited extent of the inflammation, and the general mildness of their character, *the prominent symptoms of the disease persisted for an unusually long period of time.* The brick-dust, tenacious expectoration preserved its character, on an average, till the ninth and nearly till the tenth day of the disease; the pain in the side did not wholly cease in any case before the seventh day, and in several it continued till the twentieth, twenty-fifth, and twenty-seventh, its mean duration being fifteen days; and in some of these cases, it was only removed, at last, by scarified cups or blisters. The general fever, which was in no case high, usually continued till towards the tenth day; while the physical signs did not begin to diminish before the close of the second week, four or five days after the cessation of the fever, and they did not wholly cease, until from the twenty-second to the thirtieth day. Fixing the time of convalescence, at one or two days after the subsidence of the fever, this occurred from the eleventh to the twelfth day.

I shall now compare with the foregoing results, those in a corresponding group of thirteen cases, actively treated. As in the first group, the patients were young, and the inflammation not extensive, so that they might, safely enough, have been left to themselves. In nine cases, the inflammation had reached its second stage; in four, it was still in its first, when the treatment was commenced. The patients were bled, generally or locally, once or twice, from the first to the sixth day of the

disease, on an average, near the fourth day. The sputa lost their pneumonic character, on the sixth day of the disease, about forty-eight hours after the blood-letting; the pain in the side, which was very acute in several cases, was invariably mitigated by the general or the local bleeding, and ceased entirely from the second to the twelfth day, the average day being the eighth; the general fever had wholly subsided at the end of the first week, and twenty-four hours later, convalescence was fully established; finally, the physical signs began to diminish with the cessation of the fever, that is, on the seventh day; and in ten patients, whose chests were carefully examined at the time of their discharge, this average period being the twelfth day, the lungs had entirely recovered their permeability.

M. Grisolle has studied and analyzed, according to this same rigorous method of Louis, and his exact school, still other groups of cases, under different conditions and circumstances. The results of this study and analysis, I shall very briefly state. The first group consisted of fifty cases, in which, when received into the hospital, the inflammation was still entirely in its first stage. Sixteen of the patients were females; more than four-fifths had at least an average strength and vigor of constitution, the others were thin, delicate, and with systems more or less deteriorated; the ages of the patients varied from sixteen to seventy-two years, the average being forty years. The treatment was commenced from the first to the tenth day of the

disease; in a majority of cases between the third and the fourth. In fourteen patients, the disease was light; in the remaining thirty-six, the symptoms were sufficiently grave to render the issue of the cases more or less doubtful. All the patients were bled from one to five times, according to the indications, and circumstances of each particular case,—the gravity and period of the disease, the age and constitution of the patient, and so on. The average quantity of blood taken was not far from three pints. Five of the cases terminated fatally. In more than two-thirds of the cases, the inflammation passed from the first to the second stage; in the others, this did not happen. This partial arrest, in the customary march of the inflammation, could not be attributed to any greater activity of treatment, since these patients were bled much less freely than the others; it depended apparently upon the lightness of the disease. The mean period of convalescence was towards the tenth day.

The second group consisted of one hundred and eighty-two cases, in which the inflammation, in whole or in part, had already reached its second stage, when the treatment was commenced. Thirty-nine of the patients were females; nearly three quarters had constitutions of average vigor; all the rest were delicate and feeble. The ages of the patients varied from sixteen to seventy-seven years, the average being thirty-five. The disease was more or less grave in all the cases; in twelve, both lungs were involved. The treatment was

commenced from the first to the eighth day of the disease, the average period being four days and a quarter from the beginning of the disease. The number of bleedings varied from one to six; and the quantity of blood taken, from eight ounces to four quarts. Thirty-two of the cases terminated fatally more than one-sixth. Of the one hundred and fifty patients who were cured, blood-letting was the only active remedy in sixty-nine; in the other eighty-one, antimonials were made use of. These cases will be more particularly spoken of by and by. The larger mortality in this group, than in the preceding one, is sufficiently accounted for by the more advanced stage of the disease, and by the somewhat later period when the treatment was commenced. Of the one hundred and one cases, treated principally by blood-letting, and terminating in recovery, in one-seventh where the inflammation was still in its first stage when the treatment was begun, and in one-twelfth, where the inflammation had reached its second stage, the first bleeding was immediately followed by a decided amelioration of some of the rational symptoms; this amelioration being accompanied, in only one-third of the cases, with any appreciable change in the physical signs. This prompt and decided effect usually occurred under the two following circumstances, to wit:—first, when the inflammation was limited to a small portion of the lungs, and the general symptoms were in no degree violent or grave: second, when the blood-letting was practiced at a somewhat advanced period of the

disease, when probably in its natural progress, it was tending to diminish. When blood-letting was several times repeated in the same case, each operation was generally followed by a more or less marked improvement, in one or more of the symptoms. In no case was the disease wholly arrested. The pain in the side wholly disappeared immediately, or soon after, the first blood-letting, in about one-twentieth only of the cases; in nine-tenths, it was more or less diminished, and it usually yielded more rapidly to local, than to general bleeding. Its mean duration was seven days. The influence of the treatment upon the character of the sputa was less marked, and the same thing is true of the physical signs. In two-thirds of the cases, the first blood-letting was followed by a diminution, more or less considerable, of the rapidity of the pulse. When the first bleeding was practiced in the course of the first four days of the disease, the pulse began to become slower between the fifth and the sixth day, and fell to its natural standard by the eleventh; when, on the contrary, the first bleeding was not practiced till after the fourth day, the pulse did not begin to diminish in frequency till towards the ninth day, and did not reach its natural standard till near the thirteenth.

I have now done with the subject of blood-letting in the treatment of pneumonia; and what are the results of the investigation through which we have gone? Is it proved, or is it not proved, that this remedy has a favorable influence over the disease? Most certainly there can be but one answer

to these questions. The accredited and settled belief which has prevailed ever since the age of Hippocrates in the efficacy of blood-letting in the treatment of pneumonia, is not an error and a delusion; it has its foundation in nature and in truth. And this efficacy is no longer a matter of belief merely, resting on the basis, broad enough certainly, but not always to be trusted, of what is called general experience. It is sustained by positive proof,—by all the proof, and the only proof, of which, in the nature of things, it is susceptible. It has the sanction of clear, intelligible, philosophical demonstration. It can neither be denied nor doubted, except as the reality of the material universe, or the truth of the Newtonian system, may be doubted or denied by some eccentric or crotchety dreamer, who cannot or will not see phenomena and their relations as they show themselves to the eyes of all other men. Louis has *demonstrated* that the circumstance of a few days' difference in the time of practicing blood-letting, makes not merely a trifling and unimportant, but a very considerable difference in the duration of the disease, and a corresponding difference in the duration of its leading symptoms. Grisolles has *demonstrated*, in the same manner, that mild and slight cases of the disease, although they would recover without any active remedies, *have all their prominent symptoms very greatly mitigated in severity and shortened in duration by blood-letting*. These cases do not absolutely prove that the remedy saves life, because in these cases life is saved with-

out it; but they do prove the favorable action and effect of the remedy,—all that they are capable of proving, in the nature of the case. I ought to add here, that these positive results of Louis' and Grisolle's researches *stand entirely uncontradicted by any adequate counter testimony*. They are supported and corroborated on every hand—compassed about with a great cloud of witnesses—but there is no authentic and reliable observation which throws upon them the shadow of doubt. The cases of Dr. Fleischmann, treated on the homœopathic system, and cited by Dr. Forbes, *are utterly without value in their bearing on this question*. No one circumstance affecting the danger of the disease is given, *so that the most essential elements of the problem which they are made use of to solve, are wholly omitted*. Besides this, the table of Dr. Fleischmann contains other internal evidence that no reliance is to be placed upon it. One hundred and five cases of peritonitis are given, with only five deaths. What does this mean? Does anybody believe that this number of cases of this disease occurred in a small hospital in the course of eight years, and that only five of them terminated fatally?

I am not writing an essay on the treatment of pneumonia by blood-letting, but I may very properly close these remarks by saying that the best methods of using this remedy, and the various circumstances which require modifications in its application, or which may render it improper and unsafe; such as the age, sex, constitution, previous

habits, and actual condition of the patient, the stage or period of the inflammation, the form or variety of the disease, the existing medical constitution, or epidemic tendency, and so on, have all been very well ascertained and determined.

But besides blood-letting, there is another remedy which has long enjoyed, and which still continues to enjoy, a high reputation in the cure of pneumonia. This is the tartrate of antimony and potassa; and a careful examination of its effects upon the disease, such as I have just made in regard to blood-letting, will throw a new and clear light upon the subject before us, and complete the particular and detailed illustration which I have been following out. It is not necessary that I should give the therapeutical history of this article. I will merely say, that a new and extraordinary celebrity was given to it, some fifty years ago, by the free and bold manner in which it was administered, and by the wonderful properties which were attributed to it, by Rasori. Laennec introduced the Rasorian method into France in 1817, and since that time the use of antimony in the treatment of pneumonia has been becoming more and more general, and is now nearly universal. Amongst the earliest and most positive statements of its efficacy, founded upon exact numerical data, were those of Louis and Trousseau; but my own purpose will be better and more fully answered by a summary of the very careful, extensive, and most conclusive observations of Grisolles.

M. Grisolles arranges the cases, in which he

studied the action of antimony, in three groups or series. The first of these consisted of forty-four cases, observed at the Hotel Dieu, during the years 1839 and 1840, *in which no active remedy was made use of excepting antimony*. Thirty-six of the patients were males, and eight females. Their ages varied from fifteen to seventy-one years, the average being thirty-seven. Nine had vigorous constitutions ; fifteen had constitutions of medium strength ; and the remainder, nearly one-half, were thin and delicate. In thirty-five cases, the inflammation had entirely passed into the second stage, when the special treatment was commenced ; in the other nine, the inflammation was, at least for the most part, still in its first stage. The disease was generally grave ; in no case was it mild ; in more than three-quarters of the cases at least the half of one lung was involved. In all the patients the disease was sufficiently severe, at the commencement of the treatment, to render its issue more or less doubtful. The treatment was begun from the second to the ninth day of the disease, the mean period being the fourth day. Six grains of emetic tartar was the quantity usually given, in the twenty-four hours, in five ounces of a sweetened vegetable infusion. Sometimes only four grains were given, and the quantity was never carried higher than twelve. If the effects of the remedy on the stomach and bowels during the first day were violent, on the subsequent days, a small quantity of an opiated syrup was given at short intervals. This treatment was kept up from one to four days, the

average period being about three and a-half days. Most of the patients took, in the whole, about twenty grains: in no instance did the quantity exceed sixty grains. Vomiting and purging were present in every case, at least for the first day or two, the latter generally predominating. Of thirty-six patients to whom the antimony was given for several days, there were seventeen in whom the vomiting and purging wholly ceased after the third or the fourth day. Of the forty-four cases, six terminated fatally, a little less than one-seventh. The mean age of these patients was over fifty years, and the treatment was not commenced till after the fifth day. The following were the apparent effects of the remedy upon the principal symptoms of the disease. The pain in the side, even when it was excessively severe and acute, was generally greatly relieved, or altogether removed. Of thirty-four patients in whom the pain was present when the treatment was commenced, *twenty-three were considerably relieved from the first day; in five the pain, which was excessively acute, was entirely removed.* In five other cases, the pain did not begin to diminish till after the second day; in three it became more violent, and persisted till local bleeding was resorted to. One of the most constant and striking effects of the remedy consisted in the diminution in the force and frequency of the pulse. *In twenty-seven patients, of the thirty-eight who recovered, the pulse on the second day had diminished to the extent of from ten to forty in the minute; in six the diminution did not take place till the*

third day; in four not till the fourth; and in one the rapidity of the pulse continued during a considerable part of the period of convalescence. The diminution in the frequency of the respirations was less striking and uniform. As a general rule, the improvement was most marked in cases where the breathing was most accelerated. The viscid brick-dust expectoration lost its pneumonic character and became yellowish or colorless, in most cases within from one to two or three days. *With a single exception*, in which the physical signs continued to increase for four days after the use of the antimony was begun, *these signs either remained stationary, or began to diminish, from the first day.* Thus, in eighteen cases, signs of resolution were manifest at the close of the first day; in eleven, at the close of the second; in two, at the close of the third; and in five, at the end of the fourth. Still, the stethoscopic phenomena were never entirely removed in this short period of time; some traces of them remained, in most cases, at the time when the patients left the hospital. *The heat of the skin, the headache, the thirst, and the general restlessness diminished or ceased with the same promptitude.* Another very striking and very constant result of this treatment was seen in the rapidity of convalescence, and in the small impairment of the muscular strength. The mean duration of the disease was ten days. In more than half of the patients who died, the use of the antimony was followed by a temporary mitigation in the severity of the disease.

The second group consisted of eighty cases in

which the administration of antimonials was preceded by one or more bleedings, general and local, these not having produced any very decided effects upon the progress or the principal symptoms of the disease. The bleeding in all these cases might have been repeated; it was not contra-indicated by the state of the patient; but instead of this, antimony was resorted to. The ages of the patients varied from sixteen to seventy years, the average being thirty-five and a-half. The disease was grave in all; in five-sixths, the inflammation occupied at least a-half of one lung; in eight cases, it extended to both; in the remaining one-sixth, the disease, though less severe, could not be regarded as mild. In every case, the inflammation had reached, if not in whole at least in great part, its second stage, when the antimonial treatment was commenced, which was generally from the sixth to the seventh day of the disease. Seventy of these patients recovered, and ten died. Of the first, *the pulse fell to the extent of from ten to thirty beats in the minute, immediately after the first daily potion, in thirty-seven; in only five, was the diminution deferred till after the third daily potion.* In more than half the cases, the second day of the treatment brought with it *a marked amelioration of the heat of the skin, the pain in the side, the color of the sputa, the difficulty of breathing, and the physical signs.* A very decided amendment took place in two-thirds of the cases during the first two days of the treatment. The remaining details of these cases it is not necessary to give.

Finally, in a third series were arranged thirty cases which had been abundantly bled, and in which the disease had, notwithstanding, continued to make constant progress; the state of the pulse and the general condition of the patients were such as to render any further loss of blood entirely out of the question; the danger in every case was extreme, and antimonials were given as the only and last resort. Half the cases were desperate, when this treatment was commenced. Eighteen of them terminated fatally, and in more than half of these, death took place within two days after the commencement of the antimonial treatment. *In nine cases, where life was in imminent peril, there was so decided an amendment after the first, second, or third daily potion, that the patients might be looked upon as almost out of danger.*

I have now given a sufficient number and variety of facts showing the effects of certain remedies upon a given disease, to answer the purposes of illustration and of proof which I had in view. I could easily add to these facts, if it were at all necessary or important to do so. I will merely say that in making a selection, I have chosen not those that were most favorable to the powers of art, but those that were best calculated, from the competency of their observers, and from the manner in which they were made, to exhibit the actual extent and degree of these powers, whether small or great. An important part of my work still remains,—to sum up the testimony which has been given, to measure its strength, and to estimate its value.

Let us endeavor to see what is the precise character of the evidence, contained in the foregoing statements, that we can control and cure pneumonia. Let us analyze, as far as we can, this evidence, and reduce it to its elements, in order to determine its nature, and to fix its degree of positiveness.

In the first place, it is entirely certain, that many cases of pneumonia terminate naturally and spontaneously, so to speak, in health, quite independent of any active medical treatment. This is not a matter of inference merely, or probability, but of positive certainty, ascertained by ample and conclusive observation. I need here only refer to the cases reported by M. Grisolle. *How many* cases would so terminate, it is of course quite impossible to say. The proportion is probably large; it is certainly very considerable. For instance, every thing that we know of the disease leads to the conclusion, that nearly all cases of moderate or average severity, occurring from the eighth or tenth, to the twenty-fifth or thirtieth year of life, in persons of sound constitutions, and up to the time of attack in good health, would, under the ordinary precautions of rest, regimen, and so on, terminate spontaneously in recovery. Such, at least, is the general tendency, and the general result in these cases. This conclusion rests upon the fact, that many such cases have been known to recover without any active treatment; and that under various, and in some degree, opposite modes of treatment, the mortality in this class of patients, is almost always very small.

In the second place, it is as certain, that some cases of the disease will terminate fatally, notwithstanding any assistance which art may furnish, and in defiance of this assistance. Under all modes of treatment,—positive or negative—heroic or expectant—that have ever been adopted, however skillfully and judiciously applied, numerous cases of the disease have always terminated, and still continue to terminate, in death. In the actual state of our knowledge, there are many cases over which art has little or no control, at least not enough to prevent their fatal issue. And here it is important to observe, that everything in the natural history of pneumonia, and in the analogies derived from other diseases, leads to the conclusion, that these cases are, as Sir Gilbert Blane said of the worst forms of yellow-fever, “*determinedly fatal*,”—terminating not contingently and accidentally, or through want of knowledge and skill, but necessarily, and inevitably, in death. There is good reason for believing, not that they are fatal, through our ignorance,—merely because we have not yet discovered the means of curing them,—but that they are fatal, in the nature of things, and by their own constitution. There is every reason for believing, not that we have failed to find the means of curing them, but that there are no such means. The conditions under which these cases occur, and the circumstances which give them their character of fatality, are for the most part very well known. For instance, double pneumonia, or extensive single pneumonia, occurring in a person over seventy

years old, with a constitution already deteriorated by the habitual use of alcoholic drinks, will almost certainly prove fatal. What may be the number and proportion of this class of cases, it is of course impossible to say, except in a very general and comparative way. This proportion cannot be large; it is probably very small; it is certainly much smaller than that of the first, and opposite class.

Finally, there is a third class of cases, occupying the ground between the two foregoing classes, and not tending necessarily either in one direction or the other, not terminating naturally in recovery, nor inevitably in death. It may be impossible to predicate this of any given individual case of the disease; indeed, the very constitution of this class of cases renders it so. Their termination is contingent; it depends upon circumstances; and we cannot know absolutely, that any given case of this class, terminating in death, would, under any circumstances, have terminated otherwise. There are no means of knowing this; and let not medical science be blamed, for what is beyond the reach of human faculties. But this does not affect the truth of the general assertion. Our inability, growing out of the nature of things, to assert absolutely of any given single case, that it belongs to this class, in no way prevents us from demonstrating the existence of the class itself. Of one hundred children born on the same day in England and Wales, it is impossible to say of any one of them, that it will die in the course of the first year; but this does not hinder us from knowing that such will be the

case with about fifteen of the hundred. If, of a hundred patients, with pneumonia, subjected to the influence of certain circumstances, fifty die; and if of another hundred under similar conditions, subjected to the influence of different circumstances, only twenty-five die, and if this result is repeated again and again, although it may be impossible to say which twenty-five patients have been saved, it is none the less certain that this number have been saved. There need be no more doubt, then, as to the existence of this third class of cases, than there is as to that of the first two classes, provided there is sufficient, and suitable evidence of the fact. And this evidence is entirely conclusive. Nobody can study the statements that have already been made, in the course of this inquiry, and have the slightest doubt upon the subject; I suppose no one has any doubt about it. It is obvious, that the more positive and absolute proofs, to be derived from a comparison of the results, in death or recovery, of large numbers of this class of cases,—half actively treated, and half left to themselves—is, to a great degree, unattainable. These cases are of course grave cases; they threaten life; they are attended with considerable, or with great danger; and they are not left to themselves in sufficient numbers, to furnish us with any considerable amount of this species of proof. *But it is impossible to doubt that a remedy, or a method of treatment, possessing great and unequivocal control over a disease, almost invariably, when properly and promptly applied, greatly mitigating its severity, and*

abridging its duration, must often determine the issue of the disease, and save the life of the patient. It would be utterly illogical and preposterous to doubt this, or to believe otherwise. In the particular instance before us, what the number and proportion of this class of cases may be, it is again impossible to say. I will remark, however, that the natural history of the disease justifies the conclusion, that these cases are not rare and exceptional, but that they are sufficiently numerous, and of common occurrence.

When the favorable circumstances, which determine the degree of danger from the disease, age, constitution, extent of inflammation, and so on,—preponderate, we shall have the first category of cases,—tending towards spontaneous recovery, and in most cases reaching it, without the aid of art,—at least without the aid of what are called active remedies: when the unfavorable circumstances preponderate, we shall have the second category of cases, tending towards a fatal termination, and reaching it, in spite of the efforts and aid of art: finally, when these favorable and unfavorable circumstances are more or less equally combined, we shall have the third category of cases, not tending spontaneously towards recovery, and not resulting inevitably in death [^] *In these cases, art, judiciously applied, saves the life of the patient; the issue of the cases—in death or in recovery—is dependent upon the treatment of the disease.* †

So far as the two principal objects of our inquiry are concerned, we may embody the results

of the preceding investigation in the two following brief propositions:—

First:—The science of medicine, so far as pneumonia is concerned—although, like other natural sciences, still unfinished and progressive—is, to a very satisfactory extent, settled and positive; the principal phenomena and relations of this disease, have been well and accurately ascertained; its natural history is, in a good degree, and to a considerable extent, complete.

Second:—Medical art, so far as pneumonia is concerned—although not endowed with absolute and unqualified power—is still of great and unquestionable utility. Through the agency, principally, of blood-letting and antimonials, as its most active means, it lessens the severity of the disease, shortens its duration, and in many instances prevents its termination in death.

Such, then, I believe to be a fair and true statement of the nature, and the extent of the power of art, over this form of disease. It may seem to some, that this power is circumscribed within very narrow limits,—that it is so “*cabin’d, cribb’d, confined,*” so qualified and contingent, as to be of little worth. I do not think so. Its power seems to me to be very great, and its value beyond all estimate. Such is the constitution of nature, that some cases of the disease are beyond its reach; others would struggle through their successive stages, without its formal and active aid; but the hard rigor of the former is often softened by its ministry; the latter are almost always benefitted by its interfer-

ence; while in many other cases, it determines the momentous issue of life or of death, and turns the trembling balance in the sufferer's favor.

As I have already said, I am not laying down rules for the treatment of pneumonia; but before leaving this subject, it may be proper for me to remark, for the information of my non-professional readers, that in addition to the heroic remedies which are chiefly relied upon, there are numerous other means of secondary and subordinate value, but the utility and importance of which are not less certain than those of the former.

It does not enter into my plan, to institute any comparison between the generally established mode of treating pneumonia, and other methods,—those for instance of what are called vegetable practitioners, and of the homœopathists. It is sufficient to say, that neither of these classes of physicians have furnished any adequate evidence of the superiority, or the efficacy, of their respective methods. They allege, indeed, and one class with as much confidence as the other, and on precisely similar grounds, that their patients recover, and that they recover more rapidly, and in larger proportion, than those treated in what has been called the regular way. But they have furnished no proof, whatever, of the truth of the latter part of this assertion; there is no such proof anywhere to be found. Under this state of the case, until they exhibit some evidence of the efficacy of their remedies, such as scientific medicine has exhibited of *its*, until they can point us to investigations corresponding at least in some

feeble degree, to those which I have cited, it is difficult to see by what rules of logic, by what principles of philosophy, or by what code of morals, we can be asked to believe in their doctrines, or to adopt their practice.

I have already intimated the possibility, at least, of the suspicion being entertained, that I may have acted the part of an unfair and interested partisan, in the choice I have made of a subject for my principal illustrations, and it is easy to see that this suspicion may have been strengthened by the illustrations themselves. My more skeptical readers will be very likely to say—"To be sure, we are willing to admit, that, so far as pneumonia is concerned, you have made out a very strong case; it seems to be clear enough that your science is not wholly in the dark, and that your remedies are not entirely destitute of certainty and power; indeed, we may say, that with our present impressions upon this subject, if it should so fall out that our own lungs were to be invaded by this inflammation, we should not feel altogether at ease, and quite sure of the safety of our position, in any other hands than such as you have made us acquainted with. But this may well be so; you have chosen your own subject, and treated it in your own way. Pneumonia is only one amongst many diseases; how is it with the rest of the Protean host? Do the doctrines you have laid down, in regard to that single disease, hold good in regard to the rest? Does medical science know them, and can medical art control and cure them, as they

know and cure pneumonia? Are the high claims you have set up in this particular instance in any degree, or to any considerable extent, applicable to diseases generally?" These are fair and honest questions, and I shall meet them, as I have endeavored, and shall endeavor, to meet all others,—fairly, frankly, and honestly. I have no inclination to shirk any duty that belongs to the work I have undertaken; I have no wish to slur over any part of the labor in which I am engaged.

I admit, then, that our knowledge of many diseases is much less positive and complete than our knowledge of pneumonia. The natural history of these has been less accurately and less thoroughly investigated, and is less known. The causes of this difference are various. Some of these diseases are more obscure in their nature, and more complex in their elements and relations than pneumonia is, so that their investigation is attended with greater difficulties, and beset by more numerous obstacles. Others are of less frequent occurrence, affording fewer opportunities for their study; or they occur under such circumstances, as to render this study comparatively difficult and partial. Others, again, being attended with little or no danger, have not excited the same degree of interest that attaches to the graver, and more formidable maladies. But these admissions have only a limited application. To the most frequent, and the most fatal diseases, they hardly apply at all. The individual affections, which, with pneumonia, constitute the greatest aggregate amount of disease, if I may so speak,

and destroy the largest proportion of human life, are *the eruptive, periodical, and continued fevers; inflammation of the membranes of the brain; and tuberculous phthisis*. Here are some nine or ten diseases, which destroy half, probably, of the human race; and their natural history is hardly less complete than that of pneumonia. Their symptoms, their lesions, their causes, their march and duration, their complications, their tendencies, the circumstances which affect, and which indicate their degree of danger, and their probable termination, are all nearly, and many of them fully, as well and as positively ascertained, as in the case of pneumonia. The difference is only one of degree: it is very slight; and it is every day diminishing. And the same thing may be said, with some qualification, of our knowledge of other diseases. This knowledge is of the same nature as that of pneumonia, rests on the same basis, is derived from the same sources, and is daily becoming more positive, and more complete.

If it had been my wish or purpose to produce striking and startling effects, by more vivid and dramatic representations of the achievements of medical science, I could easily have done so, and without traveling out of the records. I could have shown our science, with its nice and delicate senses, catching the first faint, ominous sign of commencing tuberculous deposition in the pulmonary tissue, watching and following its increase and development from week to week, and from month to month; noting exactly all its changes—its softening—its

discharge from the body—and then counting the cavities left in the lung, and defining their boundaries;—taking the exact gauge and dimensions of the living and beating heart, measuring the variations in the thickness of its walls, and the capacity of its cavities, marking out the circumference of its orifices—as they are enlarged or narrowed by disease,—and detecting every disturbance in the play and adjustment of its delicate valves;—seeing in the slight frown on the forehead of the young child, the end from the beginning,—the dim cloud on the horizon, no bigger than a man's hand, that shall yet so soon spread its sable pall over the sky, and blot out the light of life. But my object has been to present a plain, unvarnished, and faithful statement of the nature and extent of our knowledge of disease, avoiding even the appearance of exaggeration, and keeping carefully out of the picture, not only all false, but even all high coloring.

To give anything like completeness to our inquiry into the nature and extent of the power of medicine over disease, it is necessary to state, at least in general terms, the degree of this power over the several forms of disease to which the human body is subject. To make this inquiry absolutely complete, it would be necessary to go into a detailed examination of the therapeutics of every individual disease of any considerable importance, such as I have already bestowed upon pneumonia. My purpose, however, will be sufficiently answered by a few statements and illustrations of quite a general character.

There is a much wider difference between different diseases, in our power of curing and controlling them, than there is in our knowledge of them. The latter is inconsiderable ; the former is enormous. I will now indicate briefly, but as clearly and definitely as the present state of science will justify me in doing, the actual power of medicine over the principal forms of disease. In their relation to this subject, diseases fall naturally enough into certain family groups, the individual members differing somewhat amongst themselves, but still resembling each other sufficiently to be conveniently considered in this manner.

The first group consists of diseases of slight or very moderate severity, rarely endangering life, and terminating almost always spontaneously, after a few days' continuance, in health. Amongst them, and as representatives of the class, I may mention *common catarrh*, *simple acute diarrhœa*, and *simple jaundice*. These diseases, in their ordinary forms, uncomplicated, and occurring in adults, are not only attended with no danger, but, as a general rule, they subside and disappear in the course of a few days. For these reasons, they are often left entirely to themselves, at least so far as any active treatment is concerned. Still, they are more or less under the influence and control of medicine. The effects of remedies upon them may have been less minutely and philosophically investigated, than in the case of more dangerous affections, but these effects are matters of daily observation ; there is no more doubt about them than there is about

the connection between a west wind and fair weather. An inflammation of the mucous membrane of the upper portion of the air passages is often arrested or very greatly modified by a single dose of an opiated diaphoretic, and the same thing is true of simple diarrhœa. Some of these slight affections are more under the control of remedies than others; they may be generally safely enough let alone; but most of them may be favorably influenced by an appropriate medication,—mitigated in severity, and shortened in duration.

There is another group pretty nearly allied to the foregoing in some respects, and differing considerably from it in others. The diseases belonging to it are somewhat graver than those of the first group, though they rarely destroy life. *Functional dyspepsia*, *chorea*, and *chlorosis*, may be mentioned as members of this family. If their causes are removed, these diseases will, at least in many instances, spontaneously cease, but this tendency is not so strong as it is in the first group. The influence of remedies over some of these affections is very marked and striking. Take, for instance, chlorosis, that most common and well characterized morbid condition. When entirely simple, not complicated with any other pathological element, it is almost always absolutely under the control of remedies. The physician orders his corroborating chalybeates, and a nutritious animal diet, with the fullest and most undoubting reliance on their efficacy. He expects them, almost as a matter of course, to renovate and enrich the impoverished

and watery blood, to bring back the faded color of the cheeks and lips, and to infuse fresh strength and vigor through the debilitated frame; and he is very rarely disappointed. This disease, as I have already said, does not tend directly to destroy life, and it is accompanied with very little positive suffering; but it has no natural tendency, like many other diseases, to go through certain regular stages, and then to cease spontaneously,—it is not self-limited; it is a source of much annoyance and discomfort; it unfits one more or less for the active duties of life; it sometimes lays the foundation for other and more serious diseases, and if our science and art had done nothing else than to ascertain the effects of iron upon this malady, they would have given a gift to humanity that ought at least to shield them from the blind and bitter assaults of arrogant ignorance and wooden-headed stupidity.

In the third group, I shall include diseases which do not ordinarily destroy life, but which are somewhat graver than most of the foregoing. Many of them tend towards a natural termination in health, and with the common aids of rest and regimen, they would generally so terminate, independent of all active remedies. In this group may be placed *sporadic dysentery, simple acute rheumatism, acute pleurisy, tonsillitis, catarrhal croup*, and so on. Some of these diseases are very much, and others very little, under the control of art. In the latter category, for instance, are tonsillitis and rheumatism. We have no uniform and reliable

means of relief, in these two diseases; the control of art over them is very limited in extent; its power is very uncertain and contingent; sometimes it makes itself felt, and at others it wholly and altogether fails. Sporadic dysentery, and catarrhal croup, on the other hand, are very much under the control of art. An adequate dose of opium in the former, and an emetic in the latter, are almost invariably followed by prompt and very decided relief.

The fourth group is a very extensive, and a very important one, and more miscellaneous in its character and composition, than any of the preceding. It includes most of the more serious *local inflammations*, and all the *general fevers*,—*continued, periodical, and exanthematous*. *Whooping-cough, Asiatic cholera, erysipelas, and delirium tremens*, may be placed in this class. Most of them are more or less self-limited,—that is to say, they tend to go through a certain series of processes, and then to terminate either in death, or in health, and the direction of this tendency depends upon the grade and severity of the disease. Pneumonia belongs to this class, and the detailed remarks already made in relation to it, are more or less applicable to the other individuals of the class. I do not mean to say, that the effects of remedies upon these diseases are as great and decided as they are upon pneumonia; this would be an exaggeration; generally, they are not so; I mean, merely, to say they are of the same character. The mild forms of most of these diseases, and even those of considerable

severity, tend, like simple pneumonia in a young, robust person, very strongly towards a favorable termination, and in a great majority of instances, they reach this termination, quite independent of all active remedies. The graver and more malignant forms of the same diseases, like extensive or double pneumonia in an old person with a deteriorated and feeble constitution, tend as strongly in the opposite direction, towards a fatal termination, which also they generally reach, in defiance of medical art. Simple scarlatina almost always terminates naturally, and spontaneously, in health, without the aid of any active remedies: so does distinct, benign small-pox: so does mild yellow-fever: so do the milder forms of periodical, and of continued fever; while the grave, and malignant varieties of all these diseases, very frequently terminate in death, and are only to a very limited extent, or not at all, under the control of art. Then there is an intermediate set of cases, in which the two antagonist tendencies are nearly balanced, and in which the prevalence of one or the other may often be decided by the judicious interference, or by the entire neglect, of active medical art.

These diseases differ so widely amongst themselves, in their relation to remedies, that it is difficult to speak of them in general terms. Some of them are more obviously and more uniformly influenced by remedies than others. There is no more doubt, for instance, of the favorable effects of blood-letting upon inflammation of the pericardium, of the liver, of the kidneys, than there is of these ef-

fects on pneumonia. There is no more doubt of the efficacy of wine, in certain stages and conditions of British typhus, than there is of the effects of antimony in pneumonia. Every day, there are multitudes of patients with this disease, as directly and obviously saved from death by active stimulants, as the life of a famishing man is saved by food. And we find here one of the most constant, and one of the most important of all therapeutic relations—I mean that between periodical fever and Peruvian bark. The power of opium to allay functional spasm, and to abate neuralgic pain; the antiphlogistic action of antimony, in inflammation of the lungs; the effects of an emetic in catarrhal croup, of iron in chlorosis, of wine in low typhus, are not more invariable and certain, than is the power of cinchona to control and arrest the periodical element, in the great family of malarious fevers. The simple forms of these diseases do, indeed, very commonly subside and cease; they rarely destroy life immediately and directly; but their repeated occurrence at length undermines and breaks down the constitution, while in their more violent manifestations, they are as suddenly fatal as yellow fever; and for the prevention of these results, we have one reliable and heroic remedy—cinchona. Somewhat as I said of iron in chlorosis, this gift to humanity is a boon and a blessing, that ought to secure for medical science and medical art the deep and everlasting gratitude of the world.

The graver forms of the diseases belonging to this class are to a great extent beyond the powers of art.

Confluent small-pox, algid epidemic cholera, malignant scarlatina, and the adynamic and ataxic forms of typhus and typhoid fever, not only very frequently terminate in death, but they seem to be very little influenced, in any way, by remedial measures. The vital forces are so profoundly impaired and perturbed, that they no longer respond to the strongest appeals; they have ceased altogether to recognize or to feel their accustomed relations. But sometimes, even in this class of cases, it is very certain that life is saved by the timely appliances of art. Patients with malignant scarlatina,—the surface cold and purple—the pulse rapid and thready—the respiration quick and panting—all the powers of life suddenly and completely overwhelmed by the subtle and potent poison that pervades the system,—are sometimes apparently snatched from death by the assiduous application and administration of external and internal stimuli; and similar remarks may be made of the analogous forms of other diseases belonging to this class. It should be added farther, that although in the milder forms of many of these diseases, tending naturally to terminate in recovery, there is no evidence that active remedies exert as great an effect as they do in pneumonia; there is still ample proof that they are sometimes and in some degree serviceable. Taking these diseases together, it would be going too far, unquestionably, to say that life is as frequently saved by medical art, where it would otherwise be lost, and that they are as uniformly mitigated in severity and shortened in duration by this art, as

pneumonia is, but the difference is one of degree only; and when we have made allowance for the fact that the family of continued and eruptive fevers are less under the control of medicine than any other grave diseases which so generally terminate favorably, and that we have but few remedies bearing a special relation to individual diseases, like that of antimony to pneumonia, we shall be justified in concluding that the amount of this difference is not very great.

Our fifth group is constituted by a most formidable and appalling catalogue of diseases—having no tendency towards a favorable termination; but little or not at all under the control of remedies; and self-limited only by death. To this class belong *hydrophobia, epilepsy, traumatic tetanus, scirrhus and cancer, softening of the brain, tuberculous meningitis, phthisis, membranous croup, diabetes, albuminuria, and various structural lesions of the heart and other viscera*. Most of these diseases are, in the present state of science, beyond the reach of medicine,—some of them nearly, and others absolutely so. Amongst thousands of cases of hydrophobia, there are not half a dozen authentic examples of recovery; the disease has an invincible tendency towards death. Epilepsy sometimes ceases; it is often mitigated by treatment; it is occasionally cured; but it has no constant or uniform therapeutical relations; there are no means for its removal to be relied upon with any degree of confidence, and it generally resists all. Traumatic tetanus, when fully formed, is less invariably fatal

than hydrophobia, but it generally terminates in death, but little influenced by art. Scirrhus and cancer may be removed by the surgeon's knife, and the rapidity of their progress in some degree retarded ; but they have a strong tendency to extend and to reproduce themselves, and the pharmacopœia contains nothing by which this tendency can be resisted. Softening of the brain, and tuberculous meningitis so constantly destroy their victims, that it is a question in science whether any ever escape. Tuberculous consumption, the universal endemic, as Broussais calls it, has an immemorial and melancholy celebrity, which renders it unnecessary for me to say much about it. In temperate latitudes, it destroys one-fifth of the human race, and no climates are exempt from its ravages. The annual mortality from it in England alone is sixty thousand. Its tendency is towards death, a termination which it generally reaches. This tendency is very strong, but not absolutely and invariably invincible, as it is in many of the members of this mournful family. The strength of this tendency is not very unfrequently diminished by art ; it is sometimes arrested, or it sometimes ceases. Consumption is sometimes cured. But here, again, it is true that we have no settled and reliable means of cure. The treatment and the remedies that seem to have been effective or beneficial in one instance fail altogether in others ; and in by far the largest number, the disease goes on its downward way, giving but slight heed or none to our efforts to modify or arrest it. Membranous croup occasionally,

but very rarely, yields to remedies ; albuminuria and diabetes are often mitigated, and their duration probably prolonged, but they are hardly ever cured ; and the great family of visceral structural lesions are for the most part utterly irremovable by art. Doleful and terrific as is this gloomy catalogue, it is still incomplete. In the foregoing sketch of its dismal characteristics, I certainly cannot be accused of having anything extenuated, and I wish, before leaving the subject, to make two remarks. In the first place, although art is generally unable to arrest these diseases, and to prevent their termination in death, it still does much, at least in many instances, for their alleviation. If it does nothing else, it occasionally defers their final period ; and very generally it renders less rough and painful than it would otherwise be the pathway to the tomb ; it brings rest if not healing on its wings ; it takes some drops of bitterness from the cup which it cannot remove ; it smooths the pillow, and it spreads tenderly the couch of our last long sleep. In the second place, although this has nothing to do with the question of the actual extent of the power of medicine over disease, still in common justice to our science and art, it should be remembered, that the fault of their inability to control and to cure these diseases may not be in any degree justly chargeable upon them. It is true that we can assign no limits to the powers of art. The history of the past, the nature of the human mind and of all human knowledge, sanction and encourage at least the rational hope of boundless improvement and in-

definite progress, and the brilliant discoveries of the last few months may have well kindled into enthusiasm our own anticipations of the future. I trust that the day may come when tuberculous meningitis shall be arrested as we now arrest catarrhal croup, and when the daily hecatombs of consumption shall be no longer piled up. But in this philosophical inquiry, bright hopes are not to take the place of rigorous inductions, and we are not to forget that the foregoing diseases may be in themselves—in their very nature and constitution—incurable. In the manifold and boundless variety and the daily increasing number of the products of art—in the novel and infinite combinations of the laboratory, or in the yet unexplored fields of nature,—there may be found a remedy for hydrophobia; *but there may be no such remedy*. We have no right whatever to assume that there is. Such an assumption is wholly and absolutely gratuitous. The existence of the remedy can be shown only by its discovery; and this discovery the assiduous efforts of two thousand years have failed to make; it may never be made, and that for the simple reason that it is not in nature. The common and favorite fancy that every poison has its antidote, and every disease its remedy, is the dream of the optimist, and not the positive decision of reason and philosophy. Our best and most rational hope in regard to the most frequent and fatal of these diseases is, that we shall finally succeed in a good degree, if not entirely, in removing and

avoiding their causes, and so preventing their occurrence.

There are a few diseases differing in some respects from those of the preceding groups, which, in this general estimate of the powers of medicine, it is important not to pass over. These are diseases which have little or no tendency to terminate in health; some of which, on the other hand, have a strong contrary tendency, but which are, nevertheless, to a great extent, under the control of art. I refer particularly to *sypphilis*, *scrofula*, and some *chronic affections of the skin*. The most striking and important of these diseases is syphilis. The offspring of excessive and irregular animal indulgence, and its terrible scourge and avenger; its poison, when received into the system, and not counteracted by appropriate treatment, extends and multiplies itself, till the entire economy becomes its prey, till every fibre and every fluid of the body is involved in its foul contamination, and this fair and goodly fabric,

“The cunning’st pattern of excelling nature,”

is changed to a reeking mass of loathsomeness and abomination. No pen or pencil can caricature or exaggerate the features of this hideous malady. The famous representations of the plague, in the wax gallery at Florence, are in no degree more repulsive and appalling than are its common and everyday manifestations. And then to add a new element to the accumulated horrors of this disease, it is transmissible from parents to their offspring;

so that the sins of the father are literally visited upon the children. Now, for all this we have effectual and almost infallible remedies. The disease may almost always be entirely rooted out, and the system completely, or in a good degree, restored to its original condition. With the actual passions and weaknesses of humanity, no imagination can conceive the extent and variety of wretchedness that must have flowed from this disease, unchecked and uncontrolled by art.

I should leave this portion of my subject, and, indeed, my whole inquiry, altogether incomplete, without a statement of the relation of medical art to the process of *child-bearing*. Women generally bring forth their children, according to the primeval sentence, it is true, in sorrow and in suffering, but still in safety, without the succor or assistance of what can properly be called medical art. This is the arrangement and ordination of nature. But this arrangement is very frequently more or less seriously interfered with and disturbed; it is sometimes defeated altogether. Child-birth is a complicated and more or less difficult process; it is always painful; it is frequently tedious; it sometimes becomes utterly and absolutely impossible, without the interference of art, and it is always subject to a great variety of accidents and contingencies. Some of the difficulties which occasionally beset this process are such as nature is entirely unable to overcome; they involve the certain and unavoidable death both of mother and child. These difficulties can always be surmounted by art;

sometimes readily and completely, saving both mother and child ; at others less readily and less completely, destroying the child, or leaving the fate of the mother, or the child, or of both, uncertain. Even in the more favorable, ordinary, and natural manner in which the process is accomplished, very great assistance is frequently derived from art, and there is rarely a case in which this assistance may not be of service, in lessening the amount of suffering, and in diminishing the chances of danger.* In no department of medicine is watchful, assiduous, competent and skilful art of more signal service than in obstetrics. This is so little doubted anywhere, that it is quite unnecessary to insist upon any proof or illustration of its truth.†

* At its appropriate place, in a subsequent part of my inquiry, I have referred to the newly-discovered agents for the prevention of pain during surgical operations. Some of my readers may be surprised at the omission from the text of a similar reference here. In justice to myself and to the subject, I wish to say that I have participated, and still participate fully in the enthusiasm which these brilliant and extraordinary discoveries have excited in the popular and the professional mind. I do not doubt the value of these agents in diminishing the sufferings of child-birth ; and there is good ground to hope that they will be found of great service in the treatment of various diseases ; but they have not yet been applied to a sufficient extent, with sufficient care, and under a sufficient variety of circumstances, positively and definitively to determine their value.

† I may add here, in passing, that in no branch of practical medicine can there be required more knowledge, skill, sagacity, sound judgment, promptitude of decision, and self-possession than in this. An accomplished and safe obstetrician must be an accomplished physician. And this is the obvious and sufficient reason why this branch of practice should remain where it now principally is, in the hands of thoroughly educated medical men, and not in the hands of partially educated, and, therefore, wholly incompetent midwives.

Surgery has escaped almost entirely the charges of incompetence and uncertainty, which have been so liberally bestowed upon practical medicine. The reasons of this are simple and obvious enough. Its processes are not only more showy than those of practical medicine, but they are more easily seen and apprehended; they appeal immediately and strongly to the senses; they are so manifest, that they can be neither doubted nor mistaken. The restoration of a dislocated bone to its socket; the removal of a calculus from the bladder, either by the lithontriptor, or by the knife and forceps; the closure of an aneurism by a ligature on the diseased vessel; the instantaneous arrest of the spouting torrent of blood from a cut artery; the re-admission of the long-excluded light to the retina, by the withdrawal, or the dropping down, of the darkened curtain of the crystalline lens, are achievements so brilliant in their execution, and so striking and positive in their results, as not merely to leave no room for cavilling or for skepticism, but to excite in us at once, emotions both of wonder and delight. And we may now add, that surgery does its most formidable work,—sundering the large limbs, with its bold and free incisions, rending by main force the ligamentous fastenings, and the strong adhesions of anchylosed joints, and carrying

The objection that this arrangement is a violation of womanly delicacy and propriety, is ridiculous, and has no sense in it. The idea of indelicacy never enters the mind of the practitioner, and it can very rarely enter that of a chaste and pure woman. It is answer enough to this objection, that it is less and less felt with the advancement of civilization and refinement.

its exploring probes amongst the exquisitely sensitive filaments of exposed and irritated nerves, whose every slightest touch has heretofore been intolerable agony,—doing all this, I say, and more,—after having steeped the senses and the mind in total unconsciousness, or lapped them in positive elysium. But there is no essential difference, after all, between the certainty of surgical and the certainty of medical art. The processes and operations of the surgeon, like the medicines of the physician, are his means for the removal or mitigation of disease, and like the latter, their efficacy and success are always more or less contingent and uncertain. I mean to say by this, simply, that great and unequivocal as is the power of surgical art over disease, that of medical art is none the less so; they are both subject to similar conditions, and their degree of certainty is much the same.

There is still another service of inestimable value, which medical science and art have rendered to humanity, in ascertaining and pointing out the causes of disease, so that, by the avoidance or removal of these, disease itself may be prevented. Many of these causes, and those, too, most widely spread, and most powerful in their action, are wholly unknown to us. It is doubtful whether they are not in their nature inscrutable—not susceptible of being ascertained; and even if ascertained, it is very probable, that they would still remain as much as ever beyond our influence or control. All this is true of the subtle and mysterious agencies, which give rise to the most important and fatal forms of

endemic and epidemic disease,—periodical and yellow fever, influenza, Asiatic cholera, and so on. The essential nature and composition of these etiological poisons have thus far wholly eluded the diligent search that has been made for them, and it is not at all improbable that they will forever continue to do so. But, in regard to many other forms of disease, this is not the case. Their causes have been, in good part at least, ascertained; or rather the circumstances and conditions which favor their occurrence have been ascertained. In many instances, these circumstances and conditions are, in part, at least, such as may be avoided or removed, and so the diseases which they occasion prevented. British typhus, that terrible accompaniment of crowded wretchedness and destitution, is the direct offspring of well-ascertained agencies,—agencies of our voluntary and artificial creation, and by the entire removal of which, there is every reason to believe, the disease might be wholly extirpated and destroyed. Some of the most prolific sources of tuberculous phthisis are well known, and by conformity, on our part, to the inexorable laws and conditions of physical well-being, they might be very speedily and entirely dried up; and the same thing is true of many of the minor maladies—dyspepsia, nervous disorders, and so on. It is not that science herein has been faithless to her high mission, or unsuccessful in its fulfillment; it is not that she has failed to discover these laws, or neglected to promulgate them, with all the inevitable penalties attached to their violation, that these dis-

eases continue their unabated and dreadful ravages; it is that we ourselves give no heed to her warnings, and refuse or neglect to obey the laws which she has pointed out. Science has done its duty; it is we who have not done ours. In this connection, also, I may, more appropriately than anywhere else, allude to the almost entire extirpation of small-pox, through the agency of vaccination. I could not have found nor chosen a more fitting conclusion to this long and brilliant catalogue of the achievements of medical science and medical art; it is the richest gift that our science has ever laid on the altar of humanity; let it be the crowning rose of the garland we have woven for the august and god-like forehead of the genius of our art. In the general exemption from the ravages of small-pox, which we have now enjoyed for nearly half a century, we are likely to forget, and to under-estimate the dread, the suffering, and the mortality that formerly followed in its train. It was one of the most fearful scourges of our race; loathsome and malignant in its character; but very slightly influenced or controlled by art; propagating and extending itself, multiplying and reproducing its contagious poison, with a constancy and a prolific energy belonging to no other disease; attacking, with a like remorseless and indiscriminate fury, all ages, and all constitutions,—the young and the old—the robust and the feeble—the rich and the poor;—and where it failed to destroy, leaving always behind it its disfiguring traces; limited by no circumstances of time or place, but prevailing throughout all seasons,

and in every climate;—such was this terror of princes and of people. By the artificial substitution of a slight disease, attended with neither suffering nor peril, and hardly giving rise even to a temporary and passing inconvenience, this frightful and fatal malady is either wholly prevented, or shorn of all its danger. The immortal discovery of Jenner was a triumph of true philosophy, fairly and legitimately won—which the wildest dreamer could hardly have imagined; and it constitutes one of the richest blessings which this philosophy has conferred upon man.

I have already remarked that my inquiry has had especial and exclusive reference to the science and art of medicine, as this science and art have been generally taught, understood, and practiced, for the last two thousand years. Before concluding my subject, it is proper enough that I should say a word or two about certain medical doctrines, and systems of practice, differing very widely from those which I have been examining, and claiming to be sounder and more successful. I allude, as every body will at once understand, to homœopathy and hydropathy. It would have given me great pleasure to have instituted a fair and full comparison of these claims with those of what may be called, at least as a matter of convenience, and by way of marking the distinction, legitimate medicine. But the data essential to such a comparison do not exist; at any rate, I have been unable to procure them. I suppose the tables of Dr. Fleischmann, quoted by Dr. Forbes, furnished the

most authentic and conclusive testimony that could then be found in favor of the superior excellence and efficacy of the homœopathic system. In regard to these tables, I can only repeat what I have already said, that they fail utterly and entirely of proving any such thing. Such tables prove nothing, except that a large proportion of certain diseases terminate in recovery, and a large proportion of others terminate in death,—a fact that stood in no particular need of any new proof. The nature of the evidence necessary in order to establish the actual and relative value of different remedies and methods of treatment, must be apparent enough to all who have gone through the present inquiry, although this subject has been only partially and incidentally considered. In the vast and complex science of medicine, this is the most difficult thing to be done. Its successful accomplishment requires a more thorough and exact knowledge of disease, a longer continued, more extensive, and more assiduous observation at its bed-side, sounder judgment, a more devoted loyalty to truth, more entire freedom from all prejudice and passion, a nicer analysis, a more rigorous and inflexible logic, than are necessary to attain any other end in the science. Now, so far as I know, and I say this deliberately and without qualification, homœopathy has, in no single instance, on a scale of sufficient magnitude to be of any value, complied with the conditions which are absolutely necessary in order to ascertain the actual and comparative efficacy of its methods of treating disease. If it has done so, I have

failed to find it out. If it can point to any such researches as those of Louis, and Jackson, and Grisolle, I am yet to learn whose and where they are.

I shall now lay down my pen and close this inquiry with a single reflection. I think that medical art as it has been embodied in the lives and labors of its professors, during two thousand years, has been worthy its high vocation, true to its great trust, faithful to its almost divine mission, and that this is more true of it now than it ever was before. I claim for it no exemption from the imperfections and frailties of all human concerns. I am very willing to admit that the personal conduct, and the scientific, professional, and general attainments of medical men have not always come fully up to the requirements and obligations of their position. Knaves find their way into all places, and

“Fools rush in where angels fear to tread.”

Snobbishness, in the comprehensive meaning which Punch, in his genial pages of mingled wit and wisdom, has recently given to the term, is not confined to the other ranks and occupations of life; so much of it as appertains to the liberal professions has not been monopolized by the pulpit or the bar. Ignorance every day puts on the mask of knowledge, and pompous inanities pass current for the profoundest wisdom. Huge piles of stubble and rubbish are every year heaped up into shapeless ugliness, the fond builders believing all the while that they are rearing temples of adamant and mar-

ble, and the work goes bravely on to the admiring sound of braying asses, mistaken for the music of eternal fame. Sangrados ply the lancet and warm water in Paris as they did in Salamanca, and Sganarelles reason in the pages of the last journal as they do in those of Molière. Nevertheless, and notwithstanding all this, it is none the less true, that the obligations of the world to the science and the art of medicine, as they have been taught and practiced, are beyond all measurement or estimate. There is no process that can reckon up the amount of good which they have conferred upon the human race; there is no moral calculus that can grasp and comprehend the sum of their beneficent operations. Ever since the first faint dawn of civilization and of learning, through

“The dark backward and abysm of time,”

they have been the true and constant friends of the suffering sons and daughters of men. Through their ministers and disciples, they have cheered the desponding; they have lightened the load of human sorrow; they have dispelled or diminished the gloom of the sick chamber; they have plucked from the pillow of pain its thorns, and made the hard couch soft with the poppies of delicious rest; they have let in the light of joy upon dark and desolate dwellings; they have rekindled the lamp of hope in the bosom of despair; they have called back the radiance of the lustreless eye, and the bloom of the fading cheek; they have sent new vigor through the failing limbs; and finally, when

exhausted in all their other resources, and baffled in their skill—handmaids of philosophy and religion—they have blunted the arrows of death, and rendered less rugged and precipitous the inevitable pathway to the tomb. In the circle of human duties, I do not know of any, short of heroic and perilous daring, or religious martyrdom and self-sacrifice, higher and nobler than those of the physician. His daily round of labor is crowded with beneficence, and his nightly sleep is broken that others may have better rest. His whole life is a blessed ministry of consolation and hope. Sweeter than the water-brooks to the panting hart are his kindly voice and his affectionate smile to the lonely presence of sickness, sorrow, and pain.

“At his approach complaint grew mild,
And when his hand unbarr’d the shutter,
The clammy lips of fever smiled
The welcome that they could not utter.”

With these convictions of the powers and capabilities of our art, and of the general worthiness of its practitioners, we may rest assured, if we are only true to ourselves and to it, that the regard in which it has been held since the days of Hippocrates is in no danger of being permanently withdrawn. We must needs be visited occasionally by medical as by manifold other delusions; but it is a part of their nature always to pass rapidly away and to be soon forgotten. They are like fluttering eddies that cross the main current of the Mississippi or the Amazon; to him who happens to be

caught in the tiny whirlpools, they may seem like the majestic tide of the great river itself, but they are soon inevitably lost and swallowed up in the rush of its resistless waters, to appear and to be seen no more. No, there is no danger. The work of two thousand years is not to be demolished by the noisy clamor of a few penny trumpets. As certainly as there is truth in the foregoing inquiry, will the present feeling of distrust towards our science and our art pass away. The ancient confidence will be restored; the old love will come back again, truer and deeper for the transient and passing estrangement. The constellations themselves—Orion and the Pleiades—are sometimes apparently blotted out from the heavens, by the gorgeous glare of rockets and other artificial fireworks, kindled with sulphurous and nitrous compounds; but, courage! my friends, and a little patience,—the show will soon be over; the parti-colored flame that would rival and eclipse the planets is even now dying away; all that will remain of the blazing illumination will be some noisome gases in the atmosphere, and a few burnt out sticks on the ground; but lo! still looking down upon us, with their dear old smile of affectionate recognition, from their blue depths in the firmament, undimmed in their brightness and unchangeable in their beauty, the everlasting stars.

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